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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,543	11/30/2001	Xiang-Dong Mi	83664AEK	9166

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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2871	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/020,543	MI ET AL.	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6-9 and 11-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6-9 and 11-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Feb.6, 2006 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 5,504,603 (Winker et al) and US 5,747,121 (Okazaki et al).

Regarding claim 1, AAPA discloses (paragraphs 0003 - 0010; Fig.4A) a vertical–aligned liquid crystal display (an imaging component) comprising:

- a vertically aligned liquid crystal cell (14), and the optic axis of the cell molecules is perpendicular to the cell surface in the off-state (see Fig.4A, showing the nematic liquid crystal cell 14 having optic axis that is perpendicular to the cell surface in the off-state);

- a polarizer (18 or 12) disposed on each side of the vertical aligned liquid crystal cell (14), the polarizers (18 and 12) having polarization axes orthogonally crossed with respect to each other (see Fig.4A);
- a compensation film (27) disposed between the liquid crystal cell (14) and a polarizer (18).

AAPA does not expressly disclose that the compensation film comprises a first positive birefringent material disposed on a base film and a second positive birefringent material disposed on the first positive birefringent material, and each of the positive birefringent materials oriented with their optic axis tilted in planes perpendicular to the liquid crystal cell surface, so that the optic axes in planes are perpendicular to each other.

Winker discloses (col.9, lines 48-52) that crossed O-plate are adjacent O-plate with their azimuth angle normally crossed, that is using adjacent O-plate compensators crossed (OxO), so that each oriented with their optic axis tilted in planes (the two planes) perpendicular to each other. Winker further discloses (col.7, lines 61-62) that the O-plate compensator utilizes a positive birefringent material. Such that the crossed O-plate compensators are positive birefringent material, so that would be using a first positive birefringent material and adjacent a second positive birefringent material, and the second positive birefringent material disposed on the first positive birefringent material. Winker further indicates (col.7, lines 59-61) that using such crossed O-plate compensators would eliminate reversal of gray levels and improve gray scale stability (see col.7, lines 59-61).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image component of AAPA with the teachings of arranging adjacent crossed O-plate compensators having positive birefringent material as taught by Winker, since the skilled in the art would be motivated for eliminating reversal of gray levels and improving gray scale stability (see col.7, lines 59-61).

AAPA and Winker teach the invention set forth above except for the first positive birefringent material disposed on a base film.

Forming an optic compensation film on a base film as a support film that is common and known in the art as the positive birefringent material need to be formed on a base film as the support film. As evidence, **Okazaki** discloses (col.2, lines 27 – 41) that it is known that the optical compensatory sheet for LCD is prepared (such as by coating a solution of polymer) on a support film (base film) to support the compensation film.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image component of AAPA and Winker with the teachings of the optic compensation film disposed on a base film as taught by Okazaki, since the skilled in the art would be motivated for supporting the compensation film (see col.2, lines 27-41).

Regarding claims 8 and 14, AAPA, Winker and Okazaki teach the invention set forth above. Concerning the tilt in the optic axis of a positive birefringent material layer varying, **Winker** further teaches (col.2, lines 9-14) that using positive birefringent O-plate compensation film significantly improves the gray scale property and contrast

ratios of liquid crystal displays over a wide range of viewing angles. Because O-plate compensation film having the property of varying the tilt optic axis, therefore, that is the tilt in the optic axis of a positive birefringent material layer varies.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image component of AAPA and Winker with the teachings of using positive birefringent O-plate compensation film as taught by Winker, since the skilled in the art would be motivated for improving the gray scale property and contrast ratios of liquid crystal displays over a wide range of viewing angles (see col.2, lines 9-14).

3. Claims 15, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Winker and Okazaki as applied to claims 1, 8 and 14 above, and further in view of US 6,319,963 (Coates et al).

Regarding claim 15, AAPA, Winker and Okazaki teach the invention set forth above except for the vertical aligned liquid crystal cell is disposed between the polarizer and a reflective plate (using reflective plate).

Coates discloses (col.3, line 60 – col.4, line 28) that a reflective film prepared on a substrate is suitable for mass production, and using reflective polarizer (such as a reflective plate) in a liquid crystal display exhibits a high luminance and a considerable brightness gain up to large viewing angles (see col.4, lines 20-28).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image component of AAPA, Winker and Okazaki with the teachings of arrange a reflective plate as taught by Coates, since the skilled in the

art would be motivated for achieving high luminance and a considerable brightness up to large viewing angles (see col.4, lines 20-28).

Regarding claims 17 and 19, AAPA, Winker, Okazaki and Coates teach the invention set forth above. Concerning the tilt in the optical axis of the compensation film varying, **Winker** further teaches (col.2, lines 9-14) that using positive birefringent O-plate compensation film significantly improves the gray scale property and contrast ratios of liquid crystal displays over a wide range of viewing angles. Because O-plate compensation film having the property of varying the tilt optic axis, therefore, that is the tilt in the optic axis of a positive birefringent material layer varies.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image component of AAPA and Winker with the teachings of using positive birefringent O-plate compensation film as taught by Winker, since the skilled in the art would be motivated for improving the gray scale property and contrast ratios of liquid crystal displays over a wide range of viewing angles (see col.2, lines 9-14).

4. Claims 6, 9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Winker and Okazaki as applied to claims 1, 8 and 14 above, and further in view of US 6,115,095 (Suzuki et al).

Regarding claim 6, AAPA, Winker and Okazaki teach the invention set forth above except for that two positive birefringent layers (compensation layers) have different thickness.

Suzuki discloses (col.12, line 21 – col.13, line 20; Fig.11) that using first compensation layer (25) having positive optical anisotropy and second compensation layer (26) having positive optical anisotropy, and the two compensation layer can be positioned adjacent to each other (such as one compensation layer disposed on the other compensation layer). Suzuki further discloses (col.8, lines 27-58) that a product (ΔnF2xdF2) of index anisotropy ΔnF2 and a thickness dF2 of the second compensation layer (26) is equal to a quarter of the product (Δnxd) of index anisotropy Δn and a thickness d of the liquid crystal layer, and a product (ΔnF1xdF1) of index anisotropy ΔnF1 and a thickness dF1 of the first compensation layer (25) is equal to about a half of the product (Δnxd) of index anisotropy Δn and a thickness d of the liquid crystal layer. The same material for the compensation layer has the same index anisotropy, such that the thickness dF2 of the second compensation layer should be different (such as thinner) from the thickness dF1 of the first compensation layer. So that Suzuki discloses that two compensation layers have different thickness.

Suzuki indicates (col.9, lines 10-16) that such arrangement of the first and second compensation layers prevents the displayed image from being tinged with colors in certain viewing angles and prevents occurrence of light-loosening in oblique viewing angle.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image component of AAPA, Winker and Okazaki with the teachings of arranging the compensation layer having different thickness as taught by Suzuki, since the skilled in the art would be motivated for preventing the displayed

image from being tinged with colors in certain viewing angles and preventing occurrence of light-loosening in oblique viewing angle (see col.9, lines 10-16).

Regarding claim 9, AAPA disclosed (paragraph 0032) that the compensation film can be produced by various methods, such as a photo-alignment method was suggested by Schadt et al (Japanese Journal of Applied Physics, 1995), for example, a thin alignment layer is coated on the base film, and then to produce the compensation film, so that the alignment layer is between the compensation film and the base film.

Regarding claim 11, AAPA discloses (Fig.4A) that a compensation film (27) disposed on each side of the liquid crystal cell (14), and between the cell (14) and each of the polarizers (18 or 12).

Regarding claim 12, AAPA discloses (Fig.4A) that two compensation films (27 and 30) disposed between the vertical aligned liquid crystal cell (14) and one of the polarizers (18 or 12).

5. Claims 7, 13, 16,18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Winker, Okazaki and Coates as applied to claims 1, 8, 14, 15, 17 and 19 above, and further in view of US 5,796,456 (Takatori et al).

Regarding claims 7, 13, 16 and 18, AAPA, Winker, Okazaki and Coates teach the invention set forth above except for that the tilt in the optic axis of the compensation film is uniform.

Takatori discloses (col.6, lines 33-62) that the optical compensation layer uniformly tilt, so that the direction of each of their respective optical axes almost

correspond to the direction of the liquid crystal when a voltage is applied to the liquid crystal, and such optical compensation layer improves the view angle dependency.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the image component of AAPA, Winker, Okazaki and Coates with the teachings of the optical compensation layer uniformly tilt as taught by Takatori, since the skilled in the art would be motivated for improving the view angle dependency (see col.6, lines 33-62).

Regarding claim 20, concerning the limitation of an electronic imaging device containing the component of claim 1 that is only given weight as intended use, because any display can be used for the electronic imaging device.

Regarding claims 21-24, AAPA disclosed (paragraph 0032) that a photo-alignment method was suggested by Schadt et al (Japanese Journal of Applied Physics, 1995), and the desired alignment is obtained by photo-alignment, mechanical rubbed surface of alignment layer or other known method employ shear orientation and effect of an electric or magnetic field. That is common and known in the art and using photo-alignment such as using UV-irradiation as the shear force would have stronger alignment and the UV-irradiation would reduce the surface friction and protecting the display panel.

Response to Arguments

6. Applicant's arguments filed on Feb.6, 2006 have been fully considered but they are not persuasive.

1) Applicant filed declaration under 37 CFR 1.132 states that the O-plate compensation film for TN-LCD only degrades the performance of the VA-LCD. However, the claimed invention is using two O-plate compensation films in the VA-LCD.

2) The reference Winker teaches (col.9, lines 48-52) that crossed O-plate are adjacent O-plate with their azimuth angle normally crossed, that is using adjacent O-plate compensators crossed (OxO), so that each oriented with their optic axis tilted in planes (the two planes) perpendicular to each other. Winker further teaches (col.7, lines 61-62) that the O-plate compensator utilizes a positive birefringent material. Such that the crossed O-plate compensators are positive birefringent material, so that would be using a first positive birefringent material and adjacent a second positive birefringent material, and the second positive birefringent material disposed on the first positive birefringent material. Winker further indicates (col.7, lines 59-61) that using such crossed O-plate compensators would eliminate reversal of gray levels and improve gray scale stability.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ZQQ
Mike Qi
Patent Examiner
March 8, 2006